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ABSTRACT

This economics education publication focuses on the U.S. stock market and the risk and uncertainty that an individual faces when investing in the market. The material explains that risk and uncertainty relate to the same underlying concept randomness. It defines and discusses both concepts and notes that although risk is quantifiable, uncertainty is not, rather arising from imperfect knowledge about the way the world behaves. The document also contains a question and answer (Q&A) section which discusses the Federal Open Market Committee (FOMC), the U.S. Federal Reserve Bank's chief body for monetary policymaking. (BT)

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The Stock Market: Risk vs. Uncertainty.

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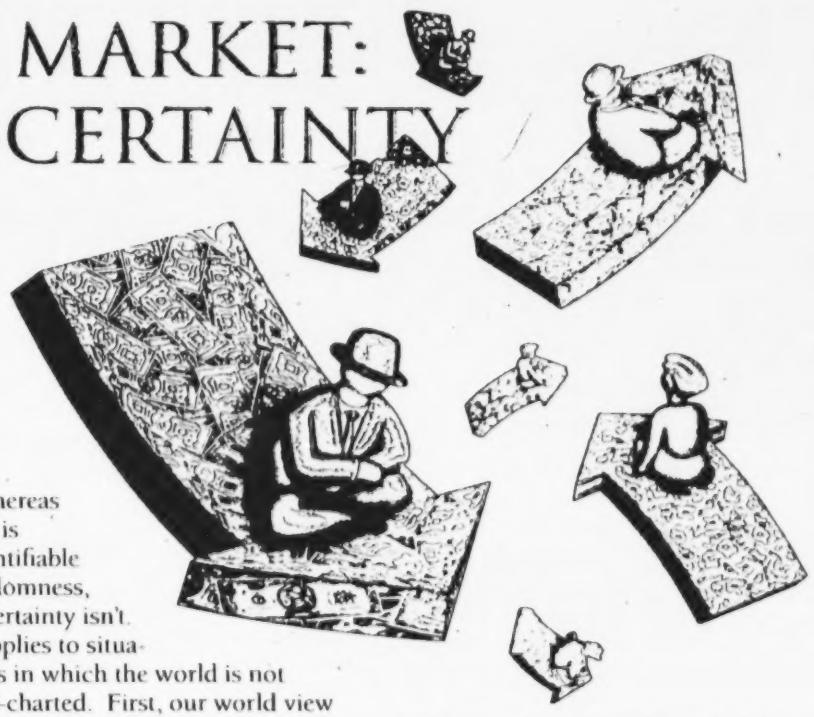
Volume 7, Issue 2 Fall 02

THE INSIDE VAULT

An economics education newsletter from the Federal Reserve Bank of St. Louis

THE STOCK MARKET: RISK VS. UNCERTAINTY



Life is risky. The future is uncertain. We've all heard these statements, but how well do we understand the concepts behind them? More specifically, what do *risk* and *uncertainty* imply for stock market investments? Is there any difference in these two terms?

Risk and uncertainty both relate to the same underlying concept—randomness. Risk is randomness in which events have measurable probabilities, wrote economist Frank Knight in 1921 in *Meaning of Risk and Uncertainty*.[1] Probabilities may be attained either by deduction (using theoretical models) or induction (using the observed frequency of events). For example, we can easily deduce the probabilities of the possible outcomes of a game of dice. Similarly, economists can deduce probability distributions for stock market returns based on theoretical models of investor behavior.

On the other hand, induction allows us to calculate probabilities from past observations where theoretical models are unavailable, possibly because of a lack of knowledge about the underlying relation between cause and effect. For instance, we can induce the probability of suffering a head injury when riding a bicycle by observing how frequently it has happened in the past. In a like manner, economists estimate probability distributions for stock market returns from the history of past returns.

Whereas risk is quantifiable randomness, uncertainty isn't. It applies to situations in which the world is not well-charted. First, our world view might be insufficient from the start. Second, the way the world operates might change so that past observations offer little guidance for the future. Once bicyclists were encouraged to wear helmets, the relation between riding the bicycle—the cause—and the probability of suffering a head injury—the effect—changed. You might simply think that the introduction of helmets would have reduced the number of head injuries. Rather, the opposite happened. The number of head injuries actually increased, possibly because helmet-wearing bikers started riding in a more risky manner due to a false perception of safety.[2]

Typically, in situations of choice, risk and uncertainty both apply. Many situations of choice are unprecedented, and uncertainty about the underlying relation between cause and effect is often present. Given that risk is quantifiable, it is not surprising that academic literature on stock market randomness deals exclusively with stock market risk. On the other hand, ignorance of uncertainty may be hazardous to the investor's financial health.

Stock market uncertainty relates to imperfect information about how the world behaves. First, how well do we understand the process that generated historical stock market returns? Second, even if we had perfect information about past processes, can we assume that the same relation between cause and effect will apply in the future?

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Q&A

Q *What is the FOMC?*

A The Federal Open Market Committee, or FOMC, is the Fed's chief body for monetary policymaking. Its members include the seven members of the Board of Governors and the 12 Reserve bank presidents. Alan Greenspan, the chairman of the FOMC, is also the chairman of the Board of Governors.

Q *Where does the FOMC meet?*

A The Board of Governors is located in Washington, D.C. The meeting takes place in its 56-foot-long boardroom.

Q *What happens at an FOMC meeting?*

A A senior official of the Federal Reserve Bank of New York discusses developments in the financial and foreign exchange markets, as well as activities of the New York Fed's domestic and foreign trading desks. Staff from the Board of Governors then present their economic financial forecasts. In addition, the Board's governors and all 12 Reserve Bank presidents offer their views on the economic outlook. The FOMC discusses the monetary policy options that would best promote economic growth with stable prices, and then it is time to vote. The voting membership includes the seven governors, the president of the Federal Reserve Bank of New York and four of the other Reserve bank presidents, who serve one-year terms on a rotating basis.

Q *What does the FOMC vote on?*

A They vote on a directive that is issued to the New York Fed's domestic trading desk. The directive informs the desk of the Committee's objective for "open market operations"—whether to ease, tighten or maintain the current policy.

Q *What are open market operations?*

A The FOMC establishes a target for the federal funds rate, the rate banks charge each other for overnight loans. Open market purchases of government securities increase the amount of reserve funds that banks have available to lend, which puts downward pressure on the federal funds rate. Sales of government securities do just the opposite—they shrink the reserve funds available to lend and put upward pressure on the federal funds rate. The amount of bank lending, of course, affects spending in the economy, which affects demand for goods and services and, thus, prices. By targeting the federal funds rate, the FOMC seeks to provide the monetary stimulus required to foster a healthy economy.

Q *How is the public informed of FOMC decisions?*

A At the conclusion of each FOMC meeting, the federal funds rate target is announced to the public in a news release. These news releases are also posted on the Board of Governors' web site at http://www.federalreserve.gov/boarddocs/press/monetary/2002/.

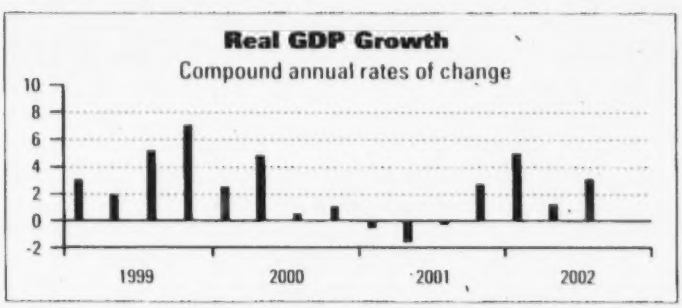
The content for Q & A was largely adapted from In Plain English, *a St. Louis Fed publication.*

Economic Snapshot

3rd Quarter 2002

	Q4-01	Q1-02	Q2-02	Q3-02
Growth Rate – Real Gross Domestic Product	2.7%	5.0%	1.3%	4.0%*
Inflation Rate – Consumer Price Index	–0.3%	1.4%	3.4%	1.9%
Civilian Unemployment Rate	5.6%	5.6%	5.9%	5.7%

**Preliminary*



Graph from November 2002 issue of *National Economic Trends*.

Which agency is responsible for reporting GDP?

Gross Domestic Product, the output of goods and services produced by labor and property located in the United States, is reported by the Bureau of Economic Analysis, U.S. Department of Commerce. For more information, see www.bea.gov.

Why does a quarterly GDP growth rate number change?

Advance, preliminary and final GDP growth rates are released during the first, second and third months of the following quarter. Changes result from incorporation of more complete information.

June 16-20 and 24-25, 2003
Making Sense of Money and Banking

Federal Reserve Bank of St. Louis

This seven-day, three-credit course is open to elementary and secondary teachers and other educators interested in integrating money and banking topics into social studies, language arts and math. The course will feature guest speakers from the Federal Reserve Bank of St. Louis, as well as tours, hands-on activities, simulations for classroom use and breakout sessions. Registration through either Southern Illinois University at Edwardsville or the University of Missouri-St. Louis is required. **Three hours of graduate credit** will be awarded to educators completing the course.

To register for ECON 500B-501 through SIUE, contact Mary Anne Pettit at (618) 650-2583.

To register for ECON 310: **Money and Banking** through UMSL, contact Sarapage McCorkle at (314) 516-5249. Ask about scholarships for practicing teachers in Missouri.

For more information, contact Dawn Griffitts, manager of economic education at the Federal Reserve Bank of St. Louis, at (314) 444-8421 or call toll-free 1-800-333-0810, ext. 44-8421.

Fed Challenge 2003

An economic competition for high school students

Are you looking for a way to bring real-world economics into your classroom? Fed Challenge, a competition for high school students sponsored by the Federal Reserve Bank of St. Louis, calls for five-member teams to do research and analyze data about current economic conditions and then recommend a specific course for monetary policy. The student teams make 15-minute presentations before a panel of judges in a mock Federal Open Market Committee forum, followed by 15 minutes of Q & A. For more information or to register a team, go to http://www.stlouisfed.org/education/fedchallenge.html.

Workshops for Fed Challenge teachers and team members will be held at each of the following competition locations.

Jan. 28, 2003 3 p.m. - 6 p.m	Louisville Branch Bank
Jan. 29, 2003 3 p.m. - 6 p.m.	Memphis Branch Bank
Jan. 30, 2003 10 a.m. - 2 p.m.	Little Rock Branch Bank
Feb. 5, 2003 9 a.m. - 1 p.m.	Federal Reserve Bank of St. Louis

Bank contacts:

Louisville	Faith Weekly (502) 568-9216
Memphis	Ellen Eubank (901) 579-2421
Little Rock	Lyn Haralson (501) 324-8240
St. Louis	Dawn Griffitts (314) 444-8421

www.FederalReserveEducation.org

This site serves as a portal to the Fed System's valuable economic education resources, including FED101, our interactive web site for high school, college and general audiences. Also available through www.FederalReserveEducation.org are other interactive web sites, helpful curricula, economic education newsletters and money museums. Come pay us a visit online!

Inside the Vault is written by Dawn Griffitts, manager of economic education at the Federal Reserve Bank of St. Louis, P.O. Box 442, St. Louis, MO 63166. The views expressed are those of the author and are not necessarily those of the Federal Reserve Bank of St. Louis or the Federal Reserve System. Please direct all comments and questions about the publication to (314) 444-8421 or dawn.c.griffitts@stls.frb.org.

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The Highs and Lows of the Market

Warren Buffett, the world's second-richest man, distinguishes between periods of comparatively high and low stock market valuation. In the early 1920s, stock market valuation was comparatively low, as measured by the inflation-adjusted present value of future dividends. The attractive valuation of stocks relative to bonds became a widely held belief after Edgar Lawrence Smith published a book in 1924 on stock market valuation, *Common Stocks as Long Term Investments*. Smith argued that stocks not only offer dividends, but also capital appreciation through retained earnings. The book, which was reviewed by John Maynard Keynes in 1925, gave cause to an unprecedented stock market appreciation. The inflation-adjusted annual average growth rate of a buy-and-hold investment in large-company stocks established at the end of 1925 amounted to a staggering 32.13 percent at the end of 1928.

On the other hand, over the next four years, this portfolio depreciated at an average annual rate of 17.28 percent, inflation-adjusted. Taken together, over the entire seven-year period, the inflation-adjusted average annual growth rate of this portfolio came to a meager 1.11 percent. Buy-and-hold portfolios in allegedly unattractive long-term corporate and government bonds, on the other hand, grew at inflation-adjusted average annual rates of 10.18 and 9.82 percent, respectively. This proves Buffett's point: "What the few bought for the right reason in 1925, the many bought for the wrong reason in 1929." One conclusion from this episode is that learning about the stock market may feed back into the market and, by changing the behavior of the market, render our "learning" useless or—if we don't recognize the feedback effect—hazardous.

Is Tomorrow Another Day?

Risk and uncertainty are two concepts that stem from randomness. Neither is fully understood. Although risk is quantifiable, uncertainty is not. Rather, uncertainty arises from imperfect knowledge about the way the world behaves. Most importantly, uncertainty relates to the questions of how to deal with the unprecedented, and whether the world will behave tomorrow in the way as it behaved in the past.

[1] This is the title of what is perhaps the best-known chapter in Knight's book "Risk, Uncertainty, and Profit."

[2] For an article on this topic, see Julian E. Barnes, "A Bicycling Mystery: Head Injuries Piling Up." The New York Times, July 29, 2001, p. 1, col. 3.

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